CALIFORNIA DEPARTMENT OF HEALTH SERVICES
2151 Berkeley Way, Room 118, Berkeley, CA 94704

ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring and Control Program

BIOTOXIN QUARTERLY REPORT

July - September 2002

BIOTOXIN SUMMARY

The enclosed reports (No. 02-24 through 02-29) provide a summary of biotoxin activity and toxigenic phytoplankton distribution for the months of July through September 2002.

PSP Toxicity Increases

July – The increase in *Alexandrium* along the northern California coast occurred primarily towards the end of the month. At several locations along the coast these initial observations were associated with low concentrations of PSP toxins in shellfish. By July 23 the toxin concentrations at the sentinel mussel buoy in Drakes Estero had increased to 166 µg and remained elevated through the end of the month.

The relative abundance of *Pseudo-nitzschia* continued to decrease along the southern California coast. The only detected remnants of the massive domoic acid event earlier in the year was the persistent high toxin levels in pelagic red crab. A sample collected offshore of Santa Cruz Island on July 10 contained 120 ppm of domoic acid. In contrast to the declining numbers in the south, this diatom began increasing in abundance at several northern California sites towards the end of the month. Volunteer phytoplankton samplers were responsible for catching this increase near the mouth of Tomales Bay. As a result of their efforts a number of shellfish samples were collected and delivered to the Department of Health Services' Food and Drug Laboratory for domoic acid analysis. A low concentration (2.5 ppm) of this toxin was detected in oysters collected a few miles farther inside the bay on July 30.

August - *Alexandrium* continued to increase in distribution and abundance along much of the California coast. Although this dinoflagellate was never a dominant part of the phytoplankton assemblage, cell numbers were high enough to produce elevated PSP toxin levels in shellfish. Shellfish at several sites in Drakes Bay (Marin County) were particularly affected, with toxin concentrations exceeding the federal alert level by the first week of August. Peak concentrations were detected in Drakes Estero by the second week of the month (1103 µg). Shellfish from much farther north in Del Norte County also reached the alert level by the second week. There was a general pattern of decreasing concentrations through the rest of the month, although the Marin sites still remained above the alert level.

Pseudo-nitzschia numbers remained steady in northern California. The low levels of domoic acid detected in Tomales Bay at the end of July continued through the first week of August. A low concentration of this toxin was also detected in mussels from Bodega Harbor (6.9 ppm) and Drakes Estero (1.9 ppm) during the second week of August.

September – The level of *Alexandrium* along the coast was consistent with the previous month. In general the PSP toxin levels continued to decline, although there was a brief spike in toxin concentration at the sentinel mussel buoy just inside Drakes Estero.

QUARANTINES

The annual mussel quarantine was in effect during this period. This annual quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries.

How to Contact Us:

The Biotoxin Quarterly Report is prepared and distributed by the California Department of Health Services' Marine Biotoxin Monitoring and Control Program.

For information on our program please call (510) 540-3423, fax us at (510) 540-2716, or send an email to glangloi@dhs.ca.gov.

Call our toll-free number for recorded information on shellfish quarantines related to marine biotoxins: ***(800) 553-4133***.

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Table 1. California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during July 2002.

COUNTY	AGENCY	SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	10
	Humboldt County Environmental Health Department	1
Mendocino	Mendocino County Environmental Health Department	1
Sonoma	CDHS Marine Biotoxin Program	1
Marin	Cove Mussel Company	4
	CDHS Marine Biotoxin Program	4
	Hog Island Oyster Company	6
	Johnson Oyster Company	37
	Marin Oyster Company	4
San Francisco	San Francisco County Health Department	2
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	U.C. Santa Cruz	4
	Santa Cruz County Environmental Health Department	4
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	8
	San Luis Obispo County Environmental Health Department	2
Santa Barbara	U.C. Santa Barbara Marine Science Institute	5
Ventura	Ventura County Environmental Health Department	2
Los Angeles	Los Angeles County Health Department	6
Orange	Ecomar, Inc.	5
San Diego	Carlsbad Aquafarms, Inc.	5

Table 2. Agencies and organizations participating in marine phytoplankton sample collection in California during July 2002.

COUNTY	AGENCY	SAMPLES
Del Norte	Del Norte County Health Department	5
Humboldt	Coast Seafood Company	8
Mendocino	CDHS Volunteer (Amy Johnson)	1
Sonoma	Bodega Marine Lab	4
	CDHS Volunteer (Cathleen Cannon)	1
Marin	CDHS Volunteers (Brent Anderson, Cal Strobel, Richard Plant)	17
	CDHS Marine Biotoxin Program	2
	Johnson Oyster Company	24
Alameda	None Submitted	
San Francisco	CDHS Volunteer (Eugenia McNaughton)	3
	Gulf of the Farallones National Marine Sanctuary	2
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	Santa Cruz County Environmental Health Department	4
Monterey	None Submitted	
San Luis Obispo	CDHS Volunteers (Renee and Auburn Atkins, Connie Marangi, Bill Schwebel)	6
	Morro Bay National Estuary Program	1
	Tenera Environmental	4
Santa Barbara	U.C. Santa Barbara Marine Sciences	5
	California Department of Parks and Recreation	4
	Santa Barbara City College	2
	Catalina Tall Ships Expeditions	2
Ventura	None Submitted	
Los Angeles	Los Angeles County Sanitation District	2
	Los Angeles County Health Department	4
	Catalina Island Marine Institute	1
Orange	Orange County Sanitation District	2
	Ecomar, Inc.	1
San Diego	San Diego County Environmental Health Department	5

Table 3. California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during August 2002.

COUNTY	AGENCY	SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	12
	Humboldt County Environmental Health Department	1
Mendocino	Mendocino County Environmental Health Department	1
Sonoma	CDHS Marine Biotoxin Program	2
Marin	Cove Mussel Company	2
	Hog Island Oyster Company	9
	Johnson Oyster Company	41
	Marin Oyster Company	6
	Point Reyes Oyster Company	1
	CDHS Marine Biotoxin Program	3
San Francisco	San Francisco County Health Department	2
San Mateo	None Submitted	
Santa Cruz	U.C. Santa Cruz	5
	Santa Cruz County Environmental Health Department	2
Monterey	Monterey County Health Department	1
San Luis Obispo	Williams Shellfish Company	8
	San Luis Obispo County Environmental Health Department	2
Santa Barbara	U.C. Santa Barbara Marine Science Institute	3
Ventura	None Submitted	
Los Angeles	Los Angeles County Health Department	2
Orange	Ecomar, Inc.	2
	Orange County Health Care Agency	1
San Diego	Carlsbad Aquafarms, Inc.	4

Table 4. Agencies and organizations participating in marine phytoplankton sample collection in California during August 2002.

COUNTY	AGENCY	SAMPLES
Del Norte	Del Norte County Health Department	3
Humboldt	Coast Seafood Company	6
Mendocino	California Department of Parks and Recreation	2
Sonoma	Bodega Marine Laboratory	3
	CDHS Marine Biotoxin Program	3
Marin	CDHS Volunteers (Brent Anderson, Cal Strobel, Richard Plant)	11
	CDHS Marine Biotoxin Program	1
	Johnson Oyster Company	20
	California Department of Fish and Game	2
Alameda	None Submitted	
San Francisco	CDHS Volunteer (Eugenia McNaughton)	4
	Gulf of the Farallones National Marine Sanctuary	3
San Mateo	CDHS Volunteer (Sandy Emerson)	1
Santa Cruz	Pacific Cetacean Group	1
	Santa Cruz County Environmental Health Department	3
Monterey	U.C. Reserve System	1
San Luis Obispo	CDHS Volunteers (Renee and Auburn Atkins, Bill Schwebel)	5
	Tenera Environmental	1
	Morro Bay National Estuary Program	1
Santa Barbara	U.C. Santa Barbara Marine Sciences	3
	California Department of Parks and Recreation	2
Ventura	None Submitted	
Los Angeles	Los Angeles County Sanitation District	3
	Los Angeles County Health Department	4
	City of Los Angeles Environmental Monitoring Division	3
	Catalina Tall Ships Expeditions	1
Orange	Orange County Sanitation District	6
	Ecomar, Inc.	1
San Diego	San Diego County Environmental Health Department	4
	Catalina Island Marine Institute	1

Table 5. California Marine Biotoxin Monitoring and Control Program participants submitting shellfish samples during September 2002.

COUNTY	AGENCY	SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	8
Mendocino	Mendocino County Environmental Health Department	1
Sonoma	Sonoma County Public Health Department	1
Marin	Cove Mussel Company	3
	Hog Island Oyster Company	4
	Johnson Oyster Company	32
	Marin Oyster Company	5
	CDHS Marine Biotoxin Program	2
San Francisco	San Francisco County Health Department	2
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	U.C. Santa Cruz	3
Monterey	None Submitted	
San Luis Obispo	Williams Shellfish Company	10
	San Luis Obispo County Environmental Health Department	1
Santa Barbara	U.C. Santa Barbara Marine Science Institute	4
Ventura	None Submitted	
Los Angeles	Los Angeles County Health Department	2
	Los Angeles Regional Water Quality Control Board	1
Orange	Ecomar, Inc.	3
San Diego	Carlsbad Aquafarms, Inc.	5

Table 6. Agencies and organizations participating in marine phytoplankton sample collection in California during September 2002.

COUNTY	AGENCY	SAMPLES
Del Norte	Del Norte County Environmental Health Department	3
Humboldt	Coast Seafood Company	6
Mendocino	California Department of Parks and Recreation	2
Sonoma	Bodega Marine Lab	1
	California Department of Fish and Game	3
	CDHS Volunteer (Cathleen Cannon)	1
Marin	CDHS Volunteers (Brent Anderson, Richard Plant)	8
	Johnson Oyster Company	16
	California Department of Fish and Game	1
	CDHS Marine Biotoxin Program	2
Alameda	None Submitted	
San Francisco	CDHS Volunteer (Eugenia McNaughton)	4
	Gulf of the Farallones Marine Sanctuary	3
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	Santa Cruz County Environmental Health Department	3
	Pacific Cetacean Group	1
Monterey	U.C. Reserve System	1
San Luis Obispo	CDHS Volunteers (Renee and Auburn Atkins, Connie Marangi)	3
	Tenera Environmental	2
	Morro Bay National Estuary Program	2
Santa Barbara	U.C. Santa Barbara Marine Sciences	3
	Catalina Tall Ships Expeditions	1
Ventura	Catalina Tall Ships Expeditions	1
Los Angeles	Los Angeles County Sanitation District	2
	Los Angeles County Health Department	2
	City of Los Angeles Environmental Monitoring Division	2
	Los Angeles Regional Water Quality Control Board	1
	Catalina Tall Ships Expeditions	1
	Catalina Island Marine Institute	3
Orange	Orange County Sanitation District	6
	Ecomar, Inc.	1
San Diego	San Diego County Environmental Health Department	5
	CDHS Volunteers (Paul Sims, Randy and Bill Dick)	2

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ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring and Control Program

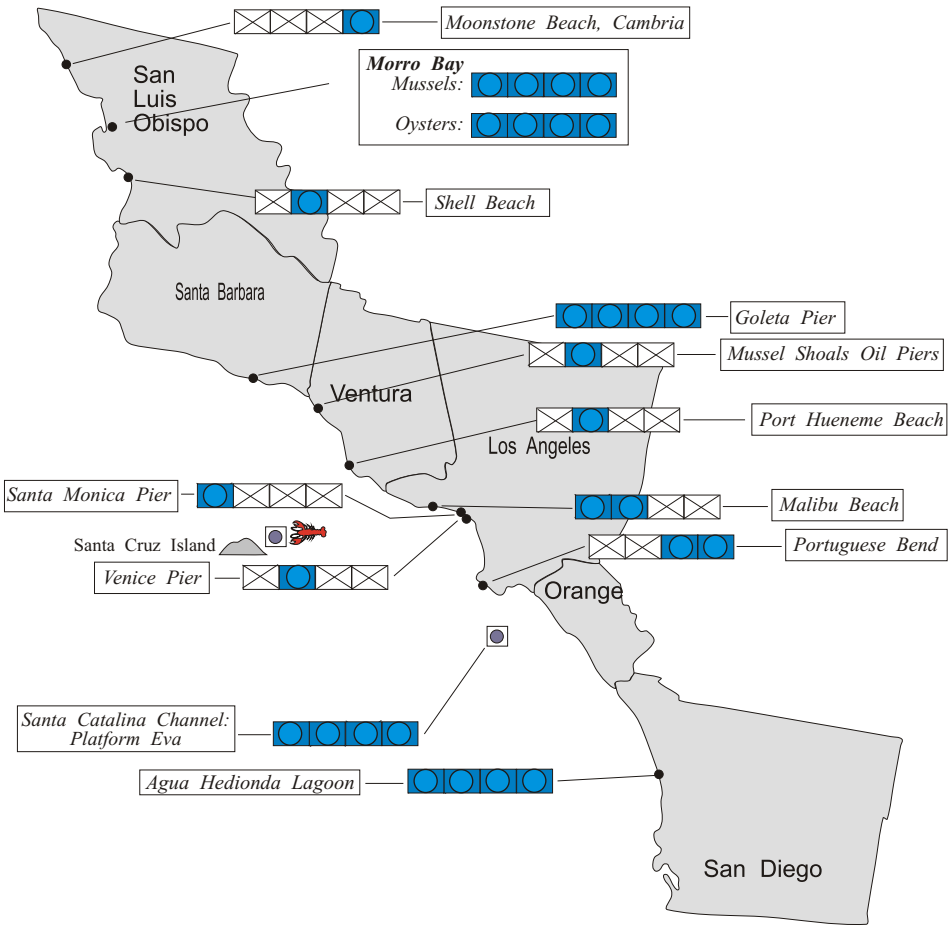
SHELLFISH BIOTOXIN MONTHLY REPORT

July 2002

Technical Report No. 02-24

Distribution of Shellfish Biotoxins

Southern California



KEY FOR SHELLFISH BIOTOXIN DATA

Week: 1 2 3 4

PSP Range: (ug/100 g) — no sample | not detected | < 80[1] | ≥80

DA Range: (ppm) — no sample | not detected | < 20[2] | ≥ 20

[1]PSP Alert Level [2]DA Alert Level
● = Single Site ◉ = Multiple Sites ◉ = Offshore Site

Source: DHS Marine Biotoxin Monitoring and Control Program, July 2002.

INTRODUCTION:

Please note the following conventions: (i) All data are for mussel samples, unless otherwise noted; (ii) All samples are analyzed for PSP toxins; domoic acid (DA) analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA). Please refer to the figure key for an explanation of the symbols used for the time of month of sample collection and the toxicity range.

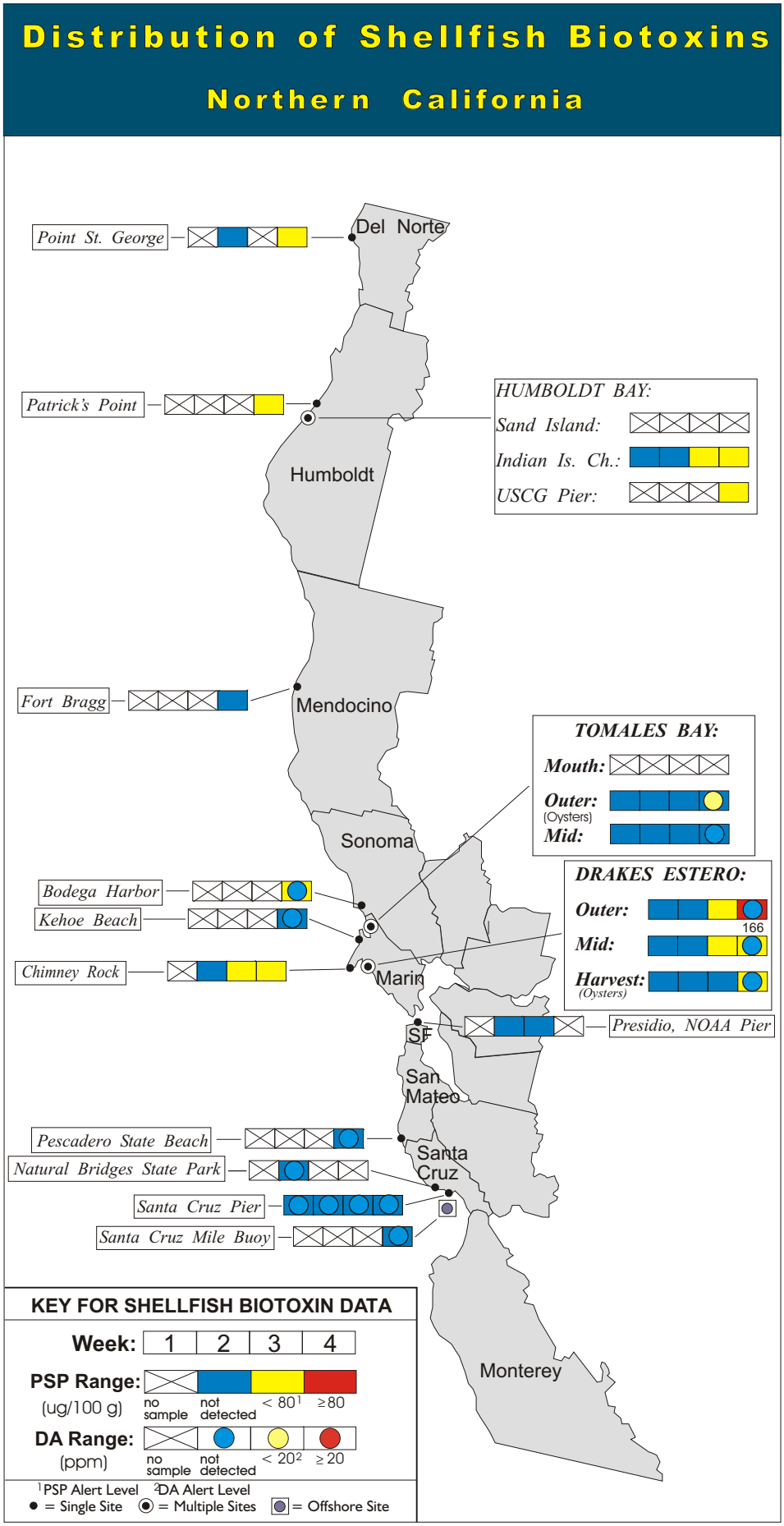
Southern California Summary:

Paralytic Shellfish Poisoning (PSP): PSP toxins were not detected in shellfish samples from southern California locations during July.

Domoic Acid (DA):

DA was not detected in bivalve shellfish samples from southern California locations during July.

Continued high levels of domoic acid were detected in pelagic red crab. A sample of these crustaceans collected offshore near Santa Cruz Island by the Catalina Tall Ship Expeditions contained 120 ppm (July 10).



Northern California Summary:

Paralytic Shellfish Poisoning (PSP):

PSP toxins were detected in shellfish from several northern California sites during July. By July 16 low levels of PSP toxins were detected in mussels from Marin and Humboldt counties. Low levels of toxicity were also detected in samples from Sonoma and Del Norte counties by the end of the month. The low levels of toxin detected along the Marin coast were localized to the Drakes Bay region: the sentinel station at Chimney Rock and inside Drakes Estero. By the last week in July toxin levels increased above the alert level in mussels from the Drakes Estero outer channel sentinel buoy (166 ug). Toxin levels increased to 64 ug in mussels from the mid Estero. Toxin levels remained low at the Chimney Rock sentinel station and were absent at Kehoe Beach, located farther north along the Marin coast.

Domoic Acid (DA):

DA was not detected in shellfish from northern California sites during July.

The Marine Biotoxin Monitoring and Control Program is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins.

For More Information Please Call:
(510) 540 - 3423

For Recorded Biotoxin Information Call:
(800) 553 - 4133

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2151 Berkeley Way, Berkeley CA 94704-1011

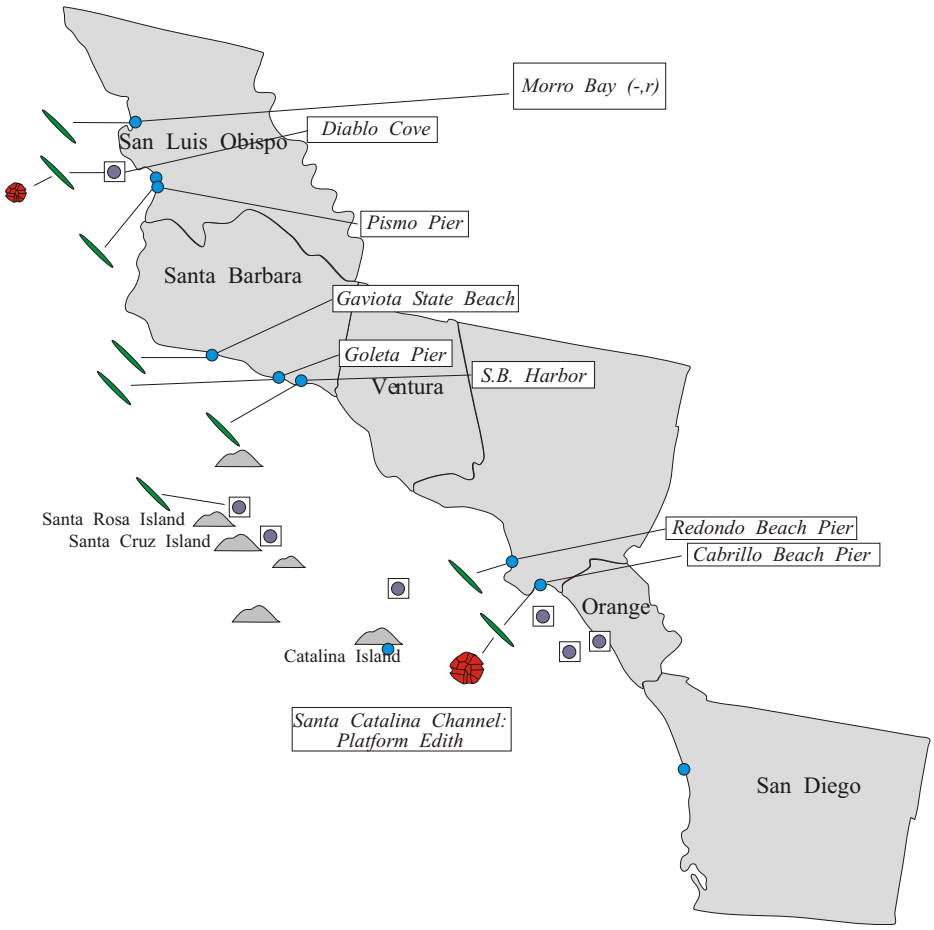
ENVIRONMENTAL MANAGEMENT BRANCH
Phytoplankton Monitoring Program

Phytoplankton Monthly Report

July 2002

Technical Report No. 02-25

Distribution of Toxin-Producing Phytoplankton
Southern California



Relative Abundance of Known Toxin Producers

Alexandrium Species

- Rare (less than 1%)
- Present (between 1% and 10%)
- Common (between 10% and 50%)
- Abundant (greater than 50%)

Pseudo-nitzschia Species

- Present (less than 10%)
- Common (between 10% and 50%)
- Abundant (greater than 50%)

MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:
(a,p) = Abundance for Alexandrium and Pseudo-nitzschia.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Southern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). The distribution and relative abundance of *Alexandrium* along the southern California coast in July declined from June's observations. Low numbers of this dinoflagellate were observed offshore of the San Luis Obispo coast and much farther south at Cabrillo Pier (Los Angeles County).

Pseudo-nitzschia species (includes all known potential domoic acid producing diatoms). The distribution of *Pseudo-nitzschia* along the southern California coast decreased dramatically in distribution and relative abundance in July compared to observations in June. However, low numbers of this diatom did persist along the coast and offshore near Santa Cruz and Santa Rosa islands throughout most of July.

The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.

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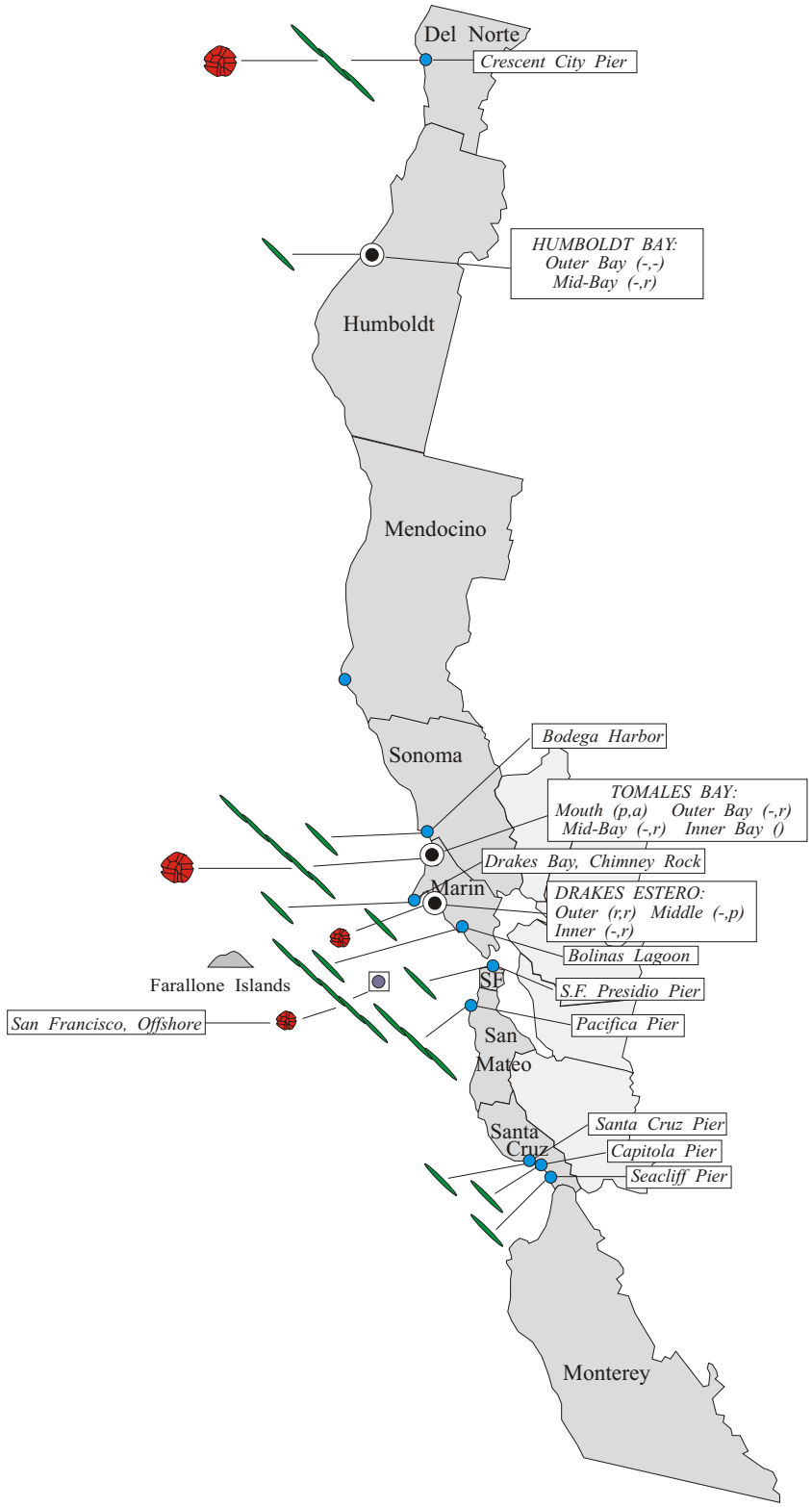
Distribution of Toxin-Producing Phytoplankton Northern California



Northern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). There was a slight increase in the distribution and abundance of *Alexandrium* in July compared to observations in June. Low numbers of this dinoflagellate were observed offshore of San Francisco, as well as along the coast of Marin and Del Norte counties.

Pseudo-nitzschia species (includes all known potential domoic acid producing diatoms). The distribution of *Pseudo-nitzschia* along the northern California coast in July remained similar to June's observations. However, the relative abundance of this diatom increased between San Mateo and Sonoma counties. Low numbers of *Pseudo-nitzschia* were observed in outer Tomales Bay at the beginning of July, becoming abundant by the end of the month (July 29). As a result of these volunteer efforts we were alerted to the bloom and increased shellfish monitoring in this area. Low levels of domoic acid were detected in oysters farther inside the bay on July 30. *Pseudo-nitzschia* was also abundant offshore of San Francisco by July 30.

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ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring and Control Program

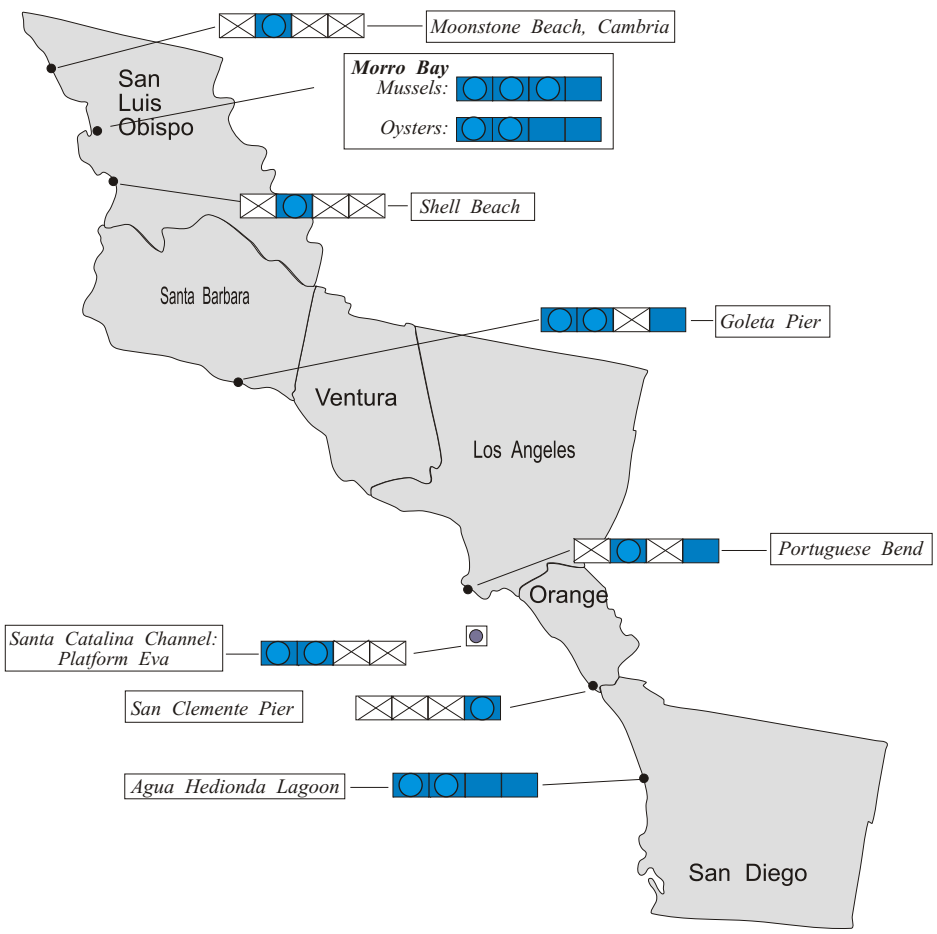
SHELLFISH BIOTOXIN MONTHLY REPORT

August 2002

Technical Report No. 02-26

Distribution of Shellfish Biotoxins

Southern California



KEY FOR SHELLFISH BIOTOXIN DATA

	Week: 1	2	3	4
PSP Range: (ug/100 g)	no sample	not detected	< 80[1]	≥80
DA Range: (ppm)	no sample	not detected	< 20[2]	≥ 20

[1]PSP Alert Level [2]DA Alert Level
● = Single Site ◉ = Multiple Sites ◍ = Offshore Site

Source: DHS Marine Biotoxin Monitoring and Control Program, August 2002.

INTRODUCTION:

Please note the following conventions: (i) All data are for mussel samples, unless otherwise noted; (ii) All samples are analyzed for PSP toxins; domoic acid (DA) analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA). Please refer to the figure key for an explanation of the symbols used for the time of month of sample collection and the toxicity range.

Southern California Summary:

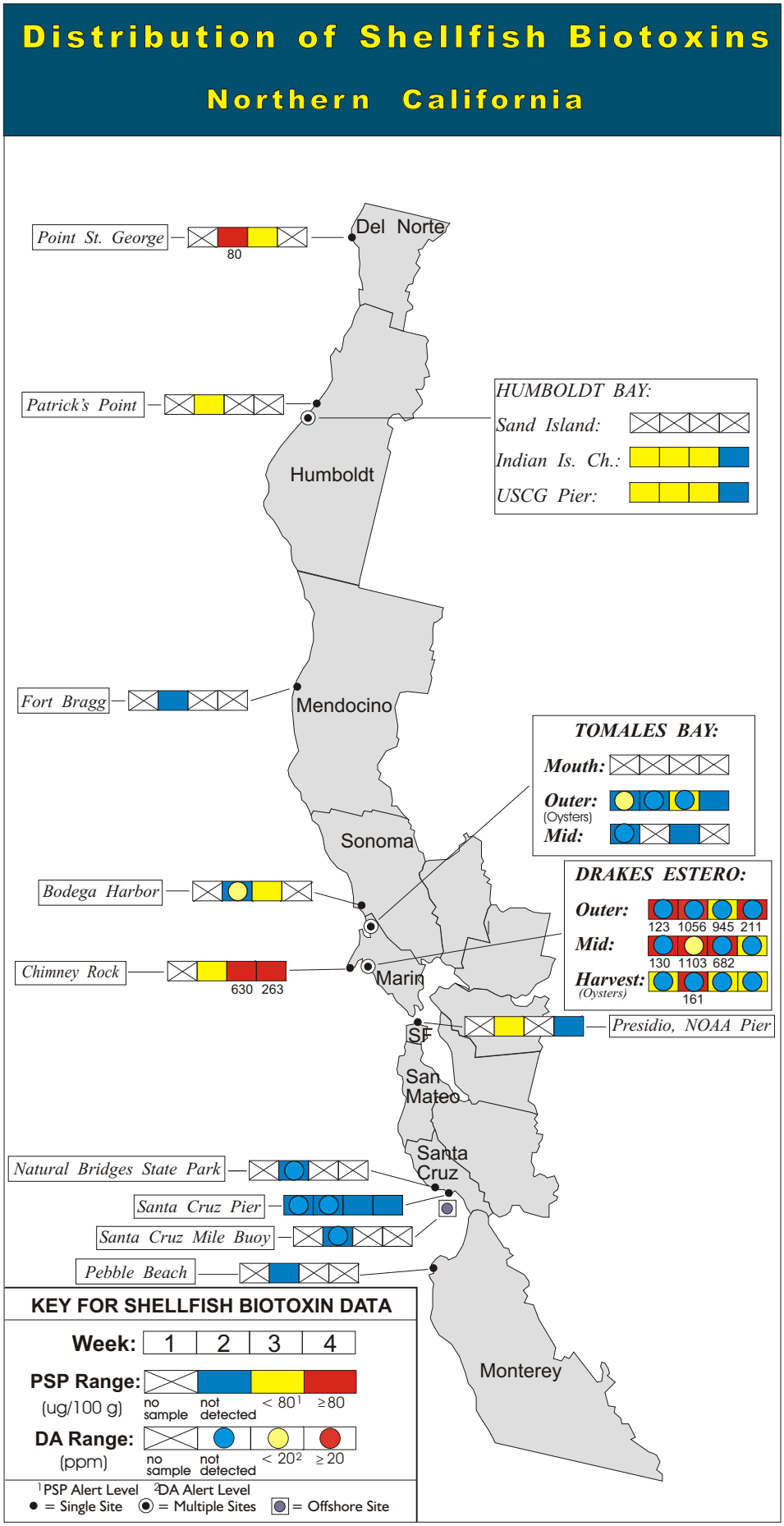
Paralytic Shellfish Poisoning (PSP): PSP toxins were not detected in shellfish samples from southern California locations during August.

Domoic Acid (DA):

DA was not detected in shellfish samples from southern California locations during August.

For Information on our Volunteer Field Sampling Program Please Call:

(510) 540-3423



Northern California Summary:

Paralytic Shellfish Poisoning (PSP):

The low levels of PSP toxins detected in mussels from Humboldt and Del Norte counties at the end of July persisted through most of August. Toxin concentrations increased to 80 ug in mussels from Point Saint George (Del Norte County) by August 9.

The low levels of toxin detected along the Marin coast at the end of July increased above the alert level by the first week of August. By August 13 mussels from Drakes Estero reached 1056 ug and 1103 ug at the outer channel sentinel buoy and in the mid Estero, respectively. These elevated toxin levels began decreasing throughout the remainder of the month but remained above the alert level at the outer Estero sentinel buoy and at the Chimney Rock sentinel station.

Domoic Acid (DA):

Low levels of DA were detected in shellfish from several sites during July. The first positive sample was collected on August 1 from Tomales Bay. Oysters from two different outer bay locations contained 3.9 and 2.7 ppm DA, respectively, and reached 5 ppm by August 6. By the second week in August low levels were also detected in Bodega Harbor (6.9 ppm) and Drakes Estero (1.9 ppm). DA was not detected beyond the second week in August.

The Marine Biotoxin Monitoring and Control Program is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins.

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2151 Berkeley Way, Berkeley CA 94704-1011

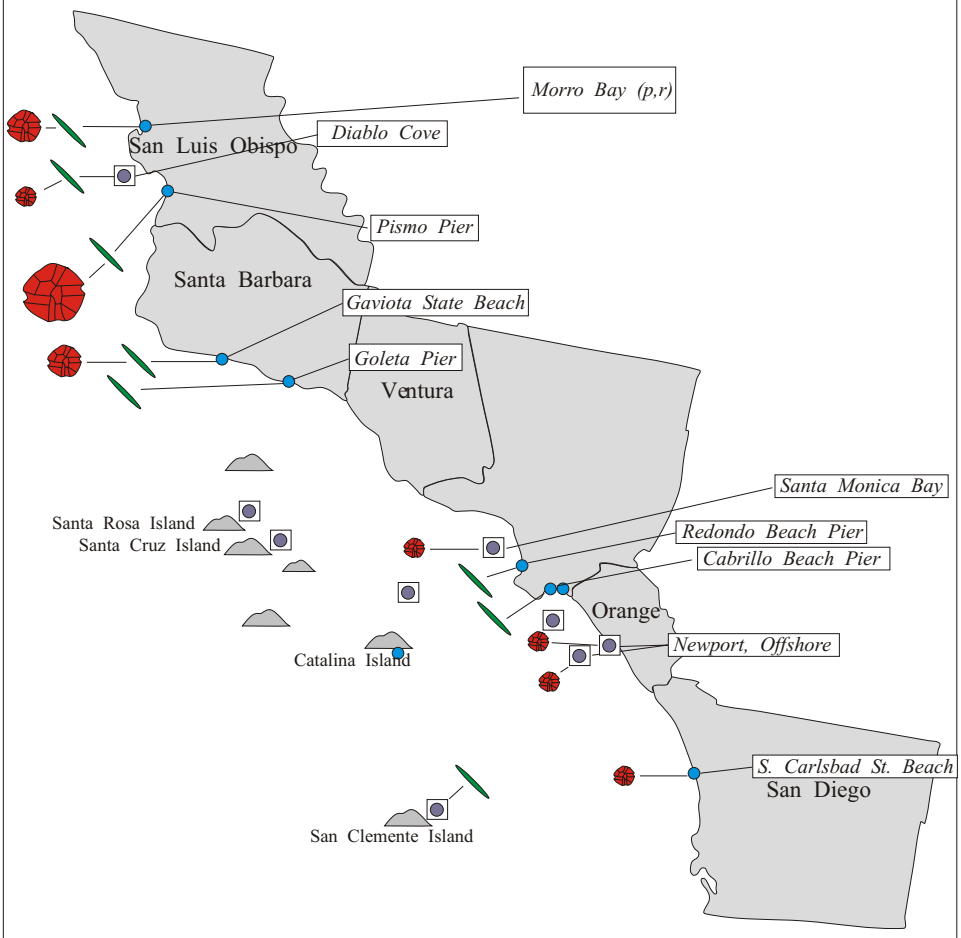
ENVIRONMENTAL MANAGEMENT BRANCH
Phytoplankton Monitoring Program

Phytoplankton Monthly Report

August 2002

Technical Report No. 02-27

Distribution of Toxin-Producing Phytoplankton
Southern California



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- Rare (less than 1%)
- Present (between 1% and 10%)
- Common (between 10% and 50%)
- Abundant (greater than 50%)

Pseudo-nitzschia Species

- Present (less than 10%)
- Common (between 10% and 50%)
- Abundant (greater than 50%)

MONTHLY SAMPLING STATIONS:

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- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:
(a,p) = Abundance for Alexandrium and Pseudo-nitzschia.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Southern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). There was a noticeable increase in the distribution and relative abundance of *Alexandrium* along the southern California coast in August. Low numbers of this dinoflagellate were observed at numerous sites between San Diego and San Luis Obispo counties. The greatest relative abundances were observed between Santa Barbara and San Luis Obispo counties. The overall density of cells was still quite low compared to observations at several northern California sites.

Pseudo-nitzschia species (includes all known potential domoic acid producing diatoms). The distribution of *Pseudo-nitzschia* along the southern California coast continued to decrease in August. Low numbers of this diatom persisted along much of the coast, however, as well as offshore near San Clemente Island.

The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.

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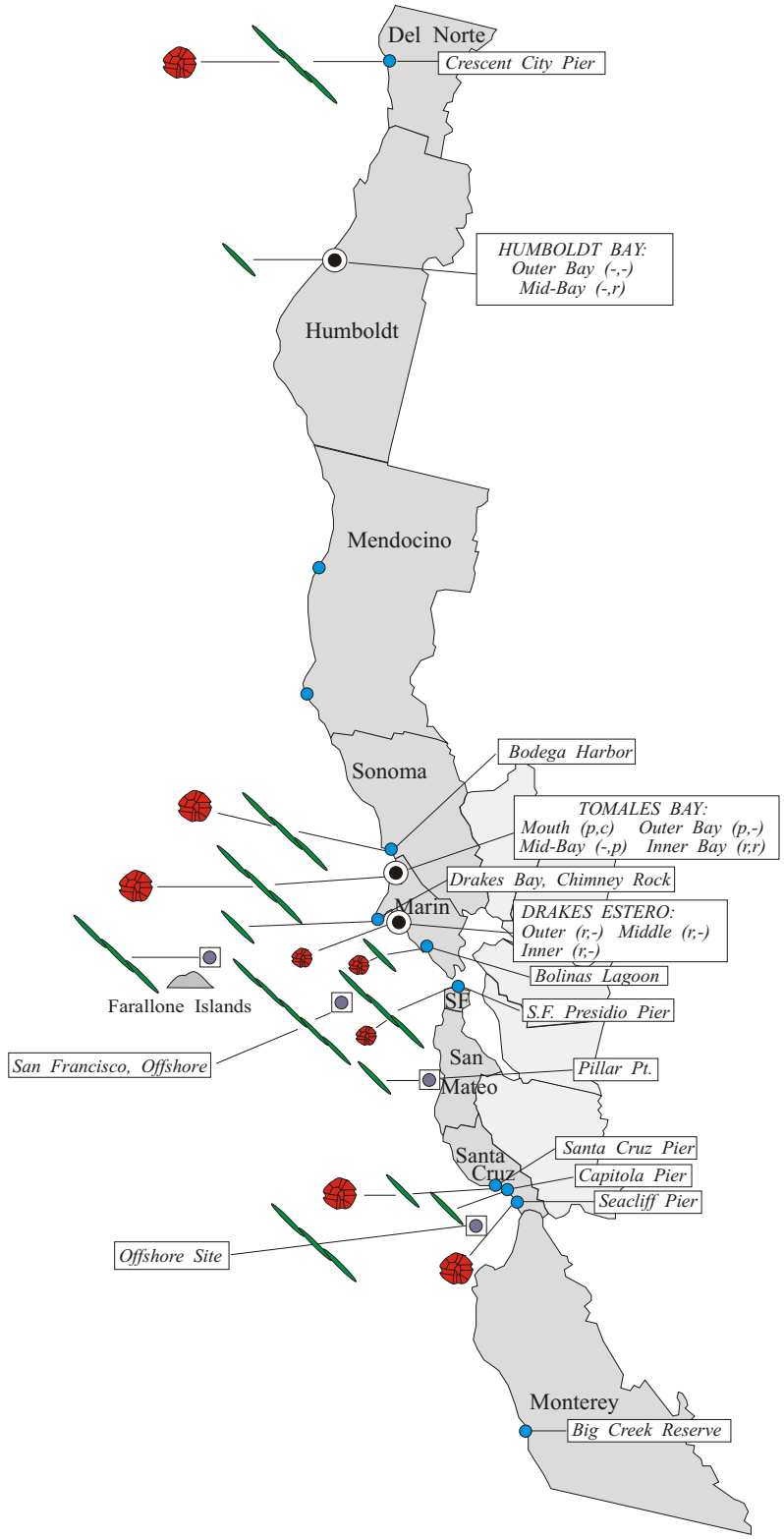
Distribution of Toxin-Producing Phytoplankton Northern California



Northern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). There was a noticeable increase in the distribution and abundance of *Alexandrium* in August compared to observations in July. Moderate numbers of this dinoflagellate were observed at sites in Santa Cruz, Marin, Sonoma, and Del Norte counties. Many of these observations were associated with varying levels of PSP toxicity in shellfish from nearby areas. The efforts of volunteer samplers near the mouth of Tomales Bay led to the detection of *Alexandrium* during the first week of August. By the third week of the month low levels of PSP toxins were detected in shellfish from the outer bay. Low numbers of this dinoflagellate were observed throughout the month in various locations within Tomales Bay and Drakes Estero.

Pseudo-nitzschia species (includes all known potential domoic acid producing diatoms). The distribution of *Pseudo-nitzschia* along the northern California coast in August remained similar to July's observations. This diatom remained abundant offshore of San Francisco and was common near the Farallone Islands, approximately 20 mile offshore of San Francisco.

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ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring and Control Program

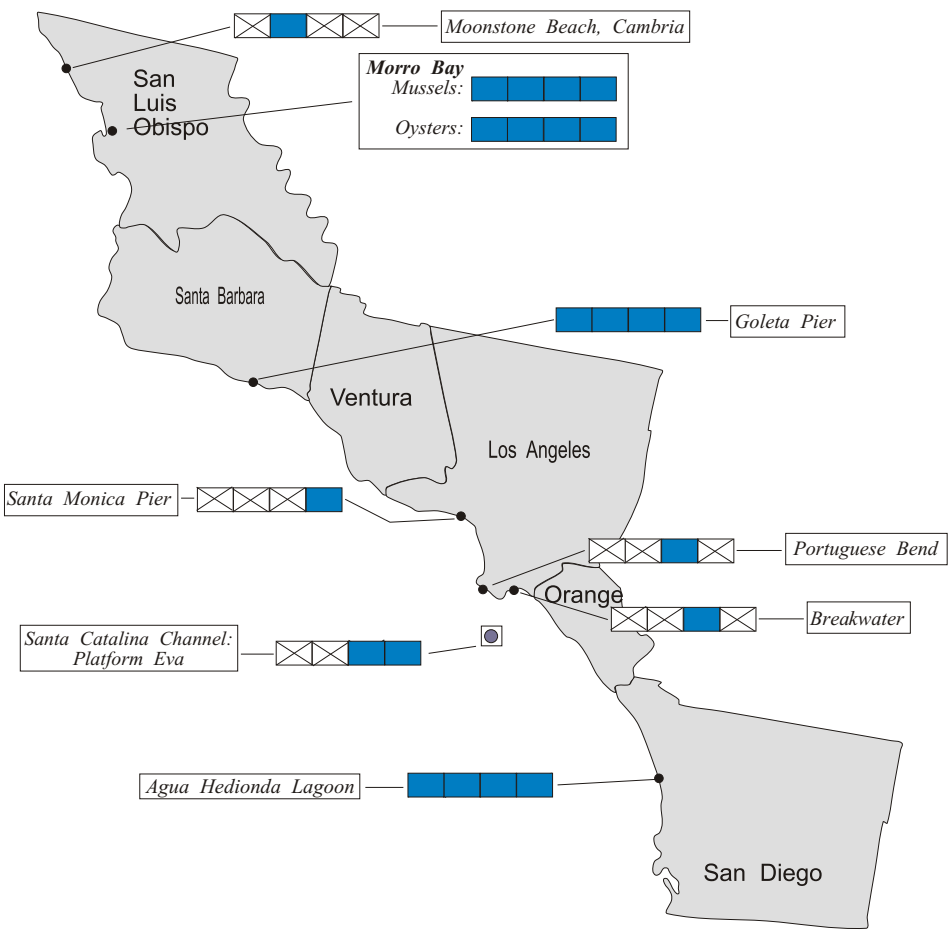
SHELLFISH BIOTOXIN MONTHLY REPORT

September 2002

Technical Report No. 02-28

Distribution of Shellfish Biotoxins

Southern California



KEY FOR SHELLFISH BIOTOXIN DATA

Week:	1	2	3	4
PSP Range: (ug/100 g)	no sample	not detected	< 80[1]	≥80
DA Range: (ppm)	no sample	not detected	< 20[2]	≥ 20

[1]PSP Alert Level [2]DA Alert Level
● = Single Site ◉ = Multiple Sites ◙ = Offshore Site

Source: DHS Marine Biotoxin Monitoring and Control Program, September 2002.

INTRODUCTION:

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Southern California Summary:

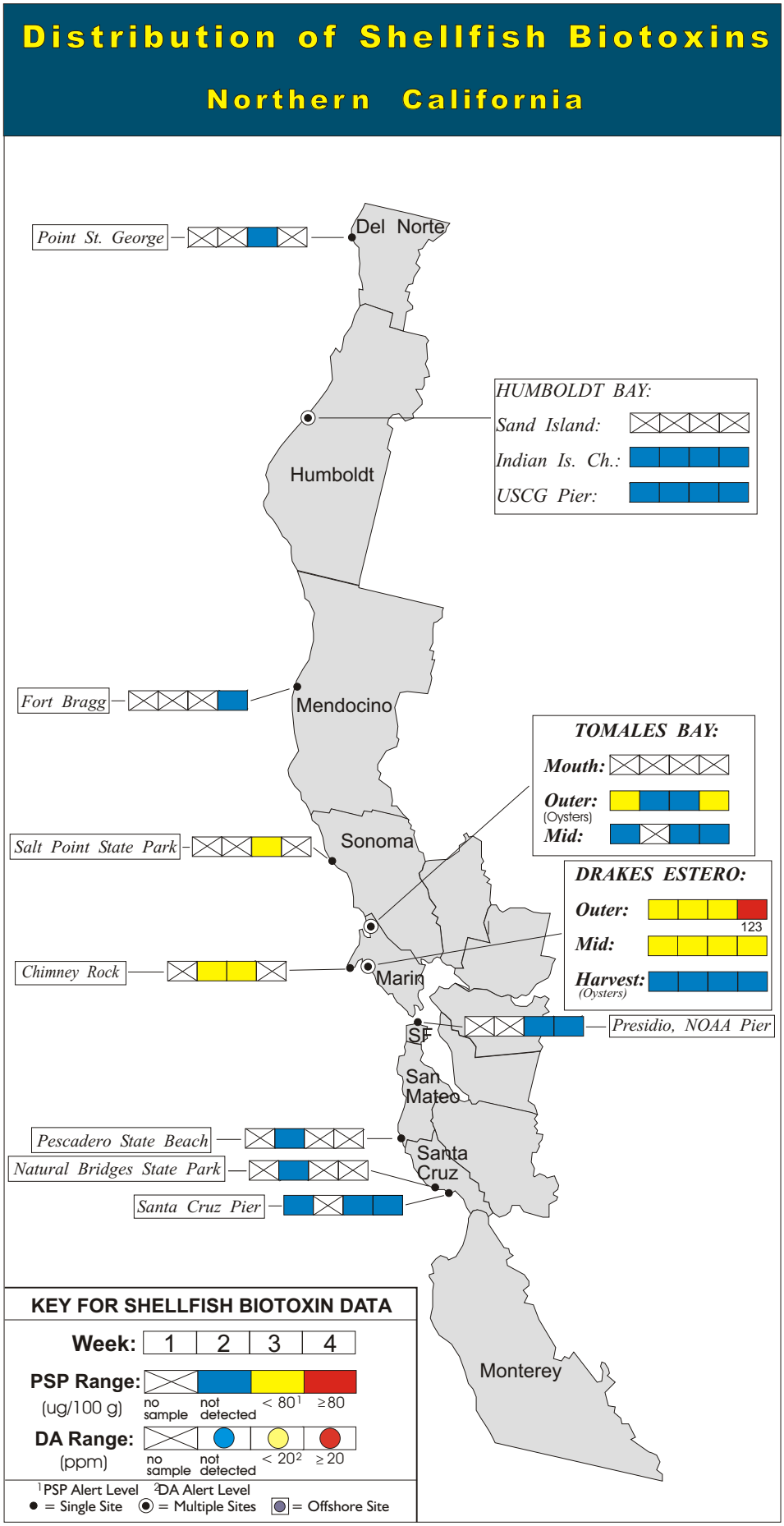
Paralytic Shellfish Poisoning (PSP): PSP toxins were not detected in shellfish samples from southern California locations during September.

Domoic Acid (DA):

DA was not detected in shellfish samples from southern California locations during September.

For Information on our Volunteer Field Sampling Program Please Call:

(510) 540-3423



Northern California Summary:

Paralytic Shellfish Poisoning (PSP):

Levels of PSP toxins continued to decline through September but persisted at several locations in Marin and Sonoma counties for much of the month.

There was a brief resurgence of toxicity in mussels from the outer channel sentinel buoy in Drakes Estero during the last week of September. The PSP toxin concentration increased to 123 ug on August 27 and decreased slightly to 89 ug by August 30.

The Marine Biotoxin Monitoring and Control Program is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins.

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For Recorded Biotoxin Information Call:
(800) 553 - 4133

CALIFORNIA DEPARTMENT OF HEALTH SERVICES
2151 Berkeley Way, Berkeley CA 94704-1011

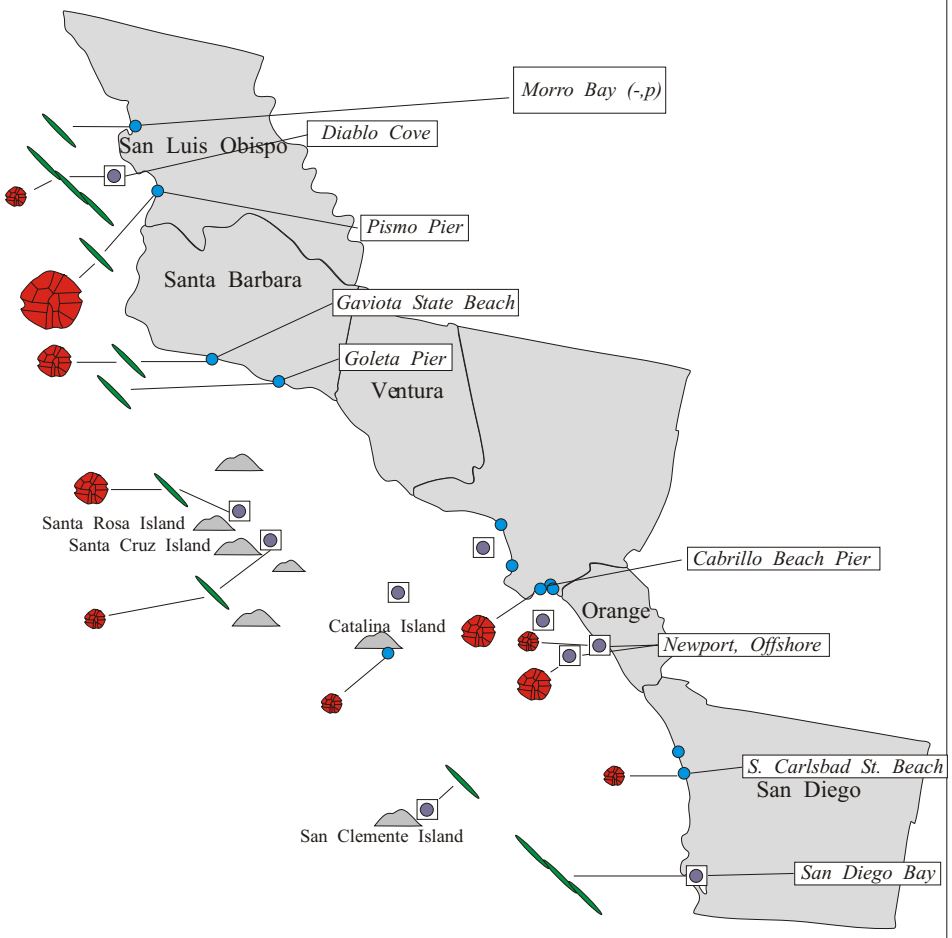
ENVIRONMENTAL MANAGEMENT BRANCH
Phytoplankton Monitoring Program

Phytoplankton Monthly Report

September 2002

Technical Report No. 02-29

Distribution of Toxin-Producing Phytoplankton
Southern California



Relative Abundance of Known Toxin Producers

Alexandrium Species

- Rare (less than 1%)
- Present (between 1% and 10%)
- Common (between 10% and 50%)
- Abundant (greater than 50%)

Pseudo-nitzschia Species

- Present (less than 10%)
- Common (between 10% and 50%)
- Abundant (greater than 50%)

MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:
(a,p) = Abundance for Alexandrium and Pseudo-nitzschia.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Southern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). The distribution and relative abundance of *Alexandrium* along the southern California coast in September were similar to observations in August. Low numbers of this dinoflagellate were observed at numerous sites between San Diego and San Luis Obispo counties. The greatest relative abundances were observed at Pismo Pier (San Luis Obispo) and Gaviota Pier (Santa Barbara).

Pseudo-nitzschia species (includes all known potential domoic acid producing diatoms). The distribution and abundance of *Pseudo-nitzschia* along the southern California coast in September were similar to observations in August. Low numbers of this diatom persisted along much of the coast, as well as offshore near Santa Rosa, Santa Cruz, Catalina, and San Clemente islands.

The Phytoplankton Monitoring Program, managed by the California Department of Health Services, is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact California's valuable shellfish resources or become a threat to consumer safety.

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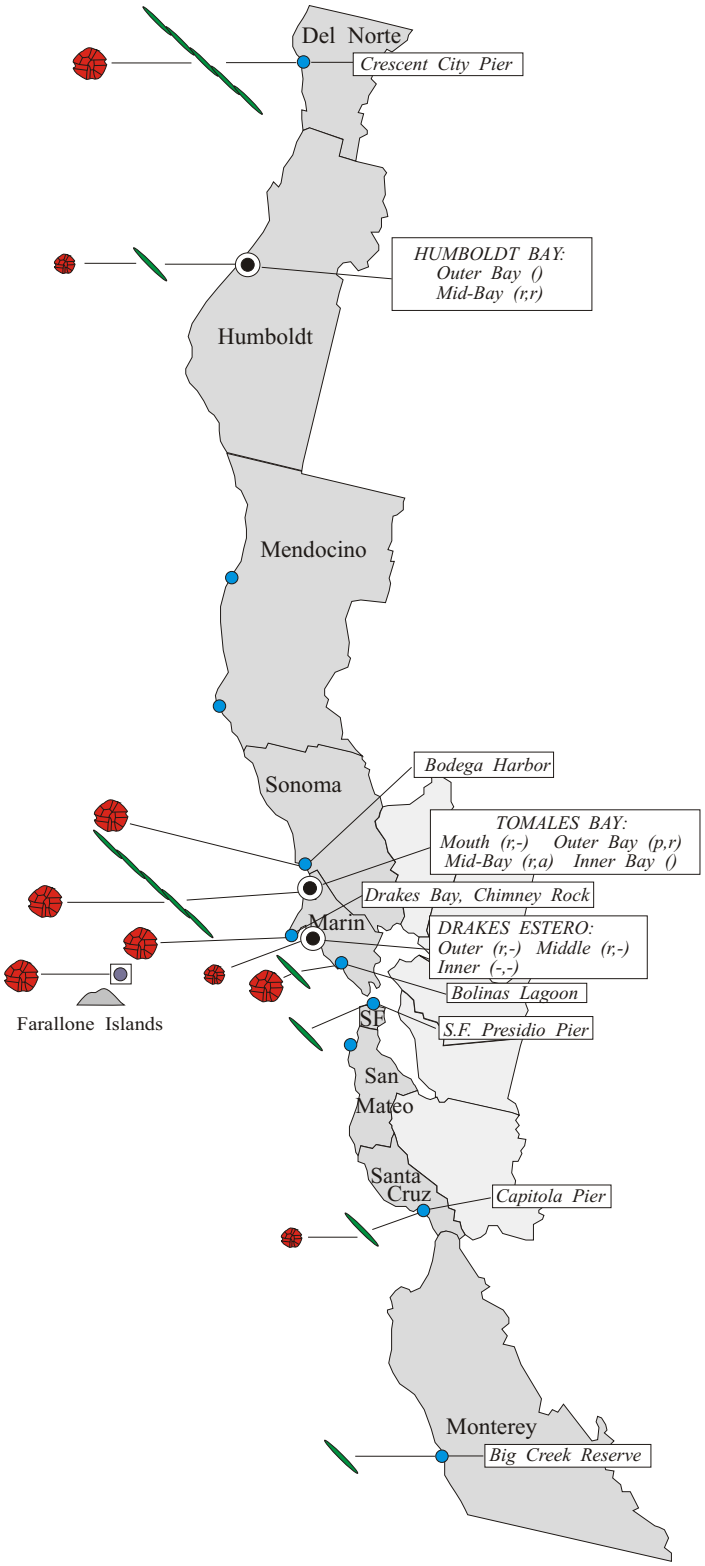
Distribution of Toxin-Producing Phytoplankton Northern California



Northern California Summary:

Alexandrium catenella (Dinoflagellate that produces paralytic shellfish poisoning (PSP) toxins). The distribution and abundance of *Alexandrium* in September was similar to observations in August. Moderate numbers of this dinoflagellate were observed at sites in Marin, Sonoma, and Del Norte counties. *Alexandrium* was also observed in moderate numbers offshore near the Farallone Islands during the last week of September. The highest relative abundances of this dinoflagellate were observed inside Bodega Harbor, inside Tomales Bay, at Chimney Rock, and near the Farallone Islands. Shellfish samples were available for the Tomales Bay and Chimney Rock sites and contained low levels of PSP toxins.

Pseudo-nitzschia species (includes all known potential domoic acid producing diatoms). In general the distribution and abundance of *Pseudo-nitzschia* along the northern California coast in September declined somewhat from July's observations. However increases in relative abundance were observed inside Tomales Bay and farther north at Crescent City.

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